

Biking In the Cambridge Area

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Introduction

Methods of environmentally safe transportation can be found in many forms, one of which is biking. We have explore datasets of public biking opportunities in the Cambridge area. Our project focuses on expanding these opportunities by pinpointing where adding in additional bike racks would provide more biking opportunities to those without them.

Goals/Techniques

Goals

- Gather data on biking in Cambridge
- Identify best locations to add in bike racks
- Add in the bike racks and analyze the results

Future Goals

- Extend the project to the Boston area
- Add in data sets based on population density for more accurate results
- Use results to determine environmental impact

Techniques

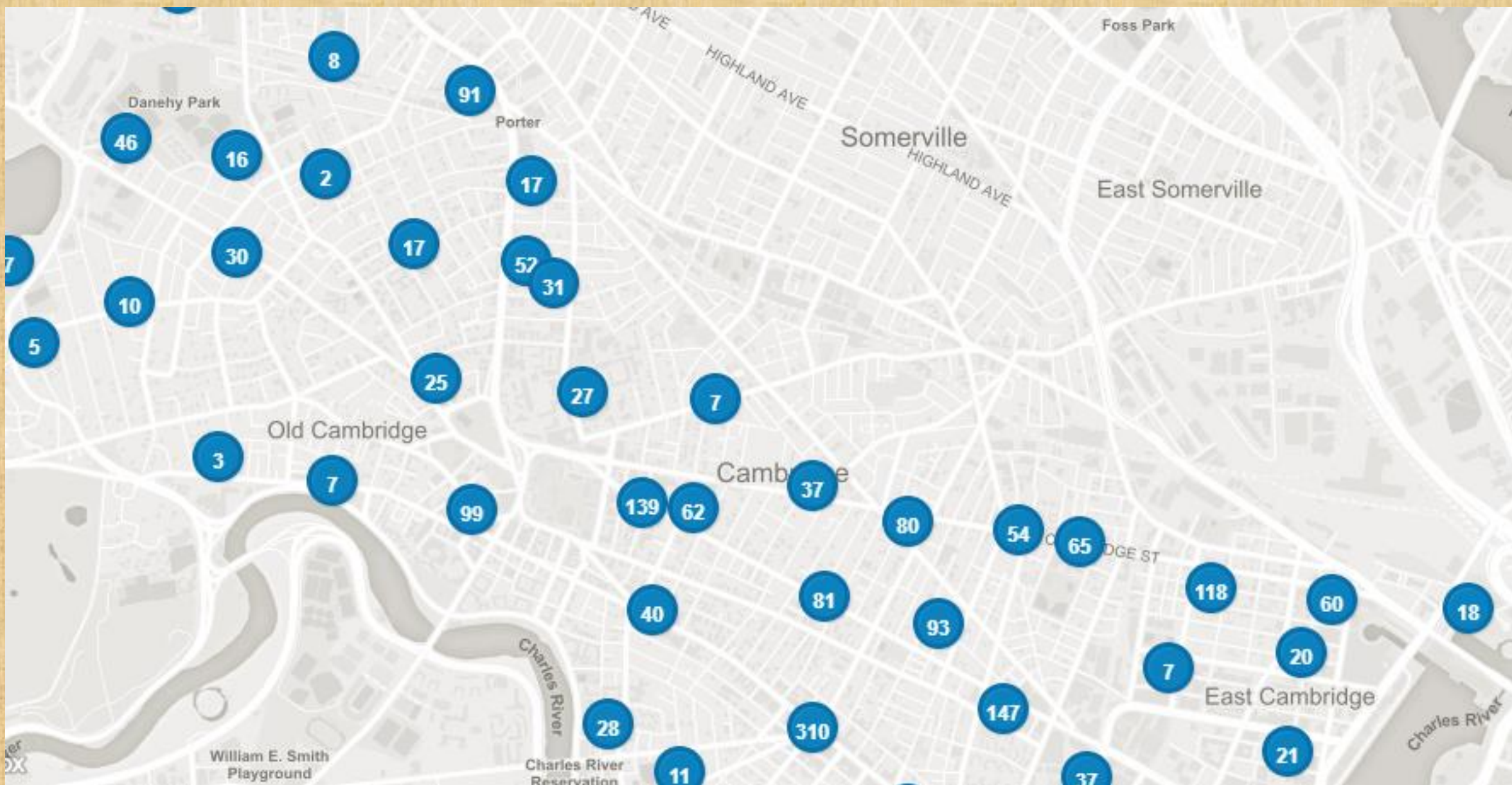
- Use public data APIs to pull data into a local MongoDB
- Use relational paradigm to organize data sets by coordinate
- Identify coordinates of potential new bike rack locations
- Use coordinates of preexisting bike racks and potential new locations to determine the best placement

Data Sets

- Boston Open Spaces
- Cambridge Bike Racks
- Cambridge Open Spaces
- Cambridge Bike Paths
- Boston Bike Paths



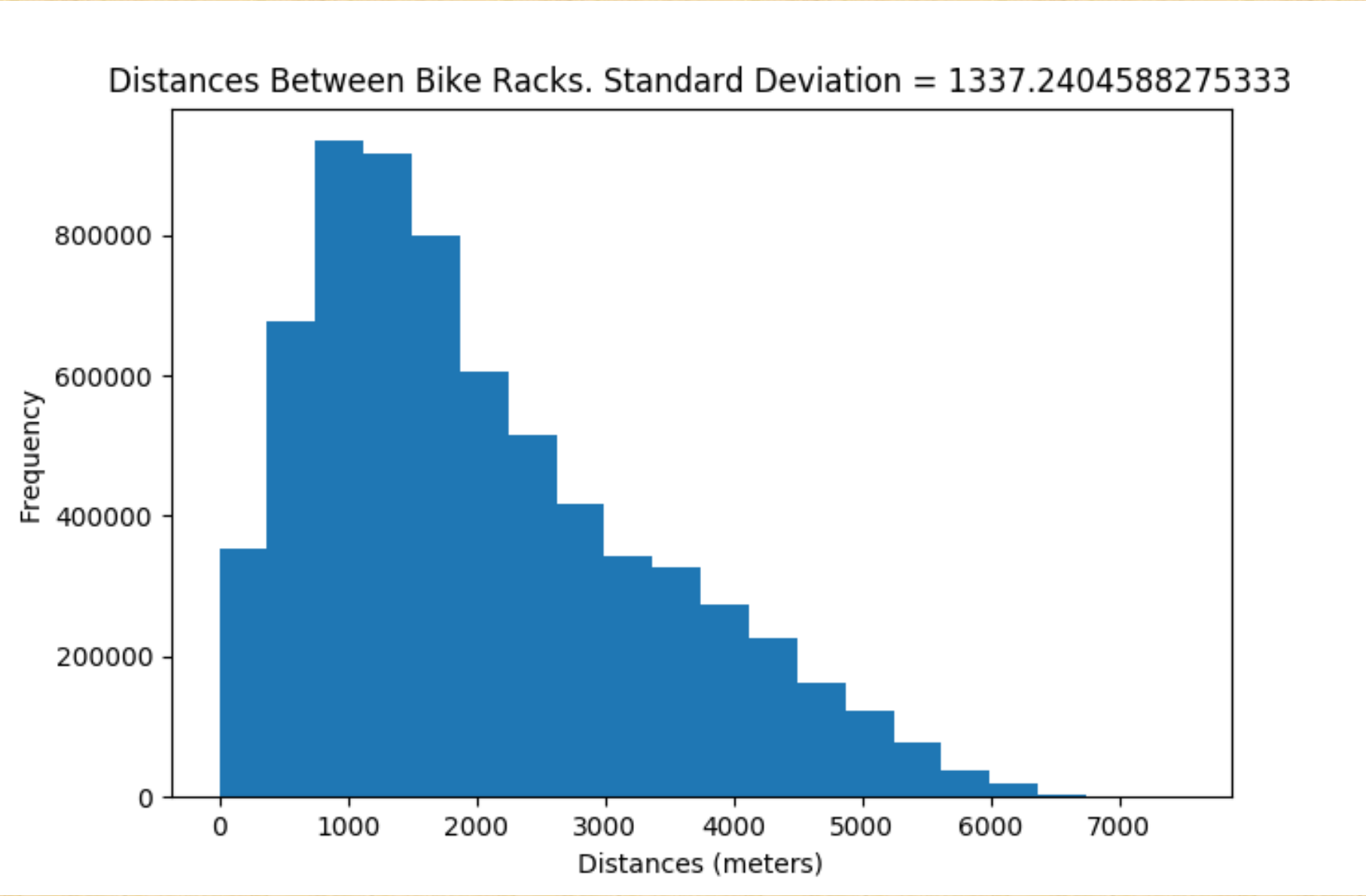
A map representing a GeoJSON file of the existing bike paths in Cambridge. Each of these paths is a representation of line string coordinates. We took these line string coordinates and found all their start and end points to determine the potential spots to add new bike racks



GeoJSON representation of clusters of bike racks in Cambridge.

Analysis

Found the standard deviation of the closest distances to the nearest bike racks for our data set before and after we inserted the new coordinates. Made a histogram for each of these sets and compared them. Used this to prove that we had added in the coordinates correctly. Compared all the distances from each bike rack to every other bike rack before and after we added in the new coordinates and made new histograms and found their standard deviations.



Conclusion

We believe have identified the best locations to add new bike racks in the Cambridge area. We found that after our technique was applied, the standard deviations of bike rack distances had increased, proving our method was successful. If this technique was implemented we are confident it would help provide more biking opportunities for a wider population that previously did not have them.